## REMARKS

The Office Action dated June 2, 2008, has been carefully considered. Claims 64-89 and 92-114 are currently pending. Applicants request that the Examiner consider the following remarks, and pass the application to allowance.

**Rejection - 35 U.S.C. 103:**

Claims 110-114 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Sofield et al. (U.S. 2002/0072127 A1) in view of Ellerbock et al. (U.S. Patent No. 6,204,920) and Wohlstadter et al. (U.S. Patent No. 6,066,448).

Initially, as set forth in 35 U.S.C. § 103(a):

> A patent may not be obtained though the invention is not identically disclosed or described ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. (Emphasis added.)

The Office bears the initial burden of establishing a factual basis to support the legal conclusion of obviousness. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Office must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

For rejections under 35 U.S.C. § 103(a) that are based upon a combination of prior art elements, the Supreme Court stated in *KSR Int'l v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007), that "[a]s is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art."

Rather, as stated in *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir.), "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *See also In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Claim 110 as amended recites a system for detecting target molecules in a sample, comprising: an assembly comprising: an array of microcantilever beams, wherein each of the microcantilever beams is comprised of a cantilever beam and a reflective paddle, the reflective paddle portion including a strengthening ridge, which prevents the reflective paddle portion from bending; and an individual fluid cell for each of the microcantilever beams, and wherein at least some of the microcantilever beams are functionalized to deflect when exposed to target molecules; an optical beam source configured to simultaneously direct an optical beam onto the reflective paddle portion of each of the microcantilever beams in the array of microcantilever beams; and an optical detector array configured to simultaneously detect the position of the reflective paddle portion of each of the microcantilever beams. (Emphasis added).

Sofield et al relates to a method and an apparatus for assaying chemical binding, that is to say reversible reactions between a receptor and a ligand. As set forth in Sofield, "a micro-cantilever 10 is fixed at one end to a block 12. The micro-cantilever 10 is generally V-shaped in plan, comprising two converging strips 13, 14, which are integral with a transverse cross strip 15. It projects 0.2 mm from the block 12, the strips 13 and 14 each being 24 microns wide and the entire micro-cantilever 10 is of silicon nitride of thickness 0.6 microns." Paragraph [0019].

As set forth in the Office Action on page 2, "[a]s to Claim 110, Sofield teaches an array of micro-cantilevers structures (i.e., an assembly comprising an array of microsensors; cantilever beam (13) and reflective paddle (14 and 15)." The Office Action further states on page 3, that "Sofield teaches a cross strip (15) that is equivalent to the claimed ridge since it prevents the reflective portion (14) from bending. See page 2, paragraph 0019 and Figure 1."

Sofield, however, does not disclose wherein each of the microcantilever beams is comprised of a cantilever beam and a reflective paddle, the reflective paddle portion including a strengthening ridge, which prevents the reflective paddle portion from bending, and an optical beam source configured to simultaneously direct an optical beam onto the reflective paddle portion of each of the microcantilever beams in the array of microcantilever beams. In Sofield, the microcantilever is comprised of two converging strips 13, 14, which are integral with a transverse cross strip 15. As set forth in Sofield, "any deflection or twisting of the microcantilever 10 is detected optically, by focusing a light beam from a laser diode 16 onto the cross strip 15, and detecting the reflection with a quadrant photodiode 18." Paragraph [0021]. Accordingly, since Sofield does not disclose a reflective paddle portion including a strengthening ridge, and an optical beam source configured to simultaneously direct an optical beam onto the reflective paddle portion of each of the microcantilever beams, Claim 110 should be allowable. Claims 111-114 are dependent from Claim 110, and for the reasons set forth as to Claim 110, Claims 111-114 should be allowable.

Claims 64-74, 77-80, 82-89, 92-102, 105-107, and 109 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Sofield et al. (U.S. 2002/0072127 A1) in view of Ellerbock et al. (U.S. Patent No. 6,204,920) and Wohlstadter et al. (U.S. Patent No. 6,066,448), and further in view of Pfost (U.S. Patent No. 6485690).

Claim 64 recites a system for detecting target molecules in a sample, comprising: an assembly comprising: a silicon portion having an array of microsensors, wherein at least some of the microsensors are functionalized to deflect when exposed to target molecules; and a glass portion, the silicon portion and the glass portion forming an individual fluid cell for each of the microsensors and wherein each of the individual fluid cells has an inlet and an outlet; an optical beam source configured to simultaneously direct an optical beam onto each of the microsensors in the array of microsensors; and an optical detector array configured to simultaneously detect the position of each of the microsensors.

Claim 92 recites a system for detecting target molecules in a sample, comprising: an array of microsensors, each microsensor having an individual microfluid reservoir, and wherein at least some of the microsensors are functionalized to deflect when exposed to a target molecule; an optical beam source configured to simultaneously direct an optical beam onto each of the microsensors in the array of microsensors; an optical detector array configured to simultaneously detect the position of each of the microsensors; and wherein each of the individual microfluid reservoirs has at least one channel for introducing a fluid sample into the individual microfluid reservoirs and a through hole for functionalization of the individual fluid reservoirs.

As explained below, the basis of the rejection is contrary to the recent Board holding in Ex Parte Whalen, Appeal 2007-4423, Application No. 10/281,142 decided 7/23/08. In the Whalen case, the Board held that (1) In re Antonie provides an exception to the rule that optimization of a variable is obvious and (2) a prima facie case of obviousness was not made out because the Examiner "has not pointed to any teaching in the cited references, or provided any explanation based on scientific reasoning, that would support the conclusion that those skilled in the art would have considered it obvious to 'optimize' the prior art compositions by increasing their viscosity to the level recited in the claims." (Whalen at page 14). The Board in Whalen explained that "it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the composition in a way that would result in the claimed composition." (Whalen at page 16). Thus, like the situation in Whalen, a prima facie case of obviousness has not been established in the Final Office Action.

Sofield et al relates to a method and an apparatus for assaying chemical binding, that is to say reversible reactions between a receptor and a ligand. In accordance with one embodiment, the "test equipment 20 comprises a silicon wafer 22 defining an array of through holes 24 each of diameter 0.7 mm. Within each hole 24 is a micro-cantilever 10 with gold on its lower surface. A thin glass plate 26 is bonded to the lower surface of the wafer 22, so that an array of liquid vessels are defined by the holes 24 and the plate 26." Paragraph [0003].

As set forth in the Office Action on page 9, Sofield does not suggest or teach that each hole or individual fluid cell has an inlet and an outlet, or that each of the individual microfluid reservoirs has at least one channel for introducing a fluid sample

into the individual microfluid reservoirs and a through hole for functionalization of the individual fluid reservoirs.

Ellerbock et al. relates to a system such as for sensing strain or temperature of an aircraft and for transmitting information in communication systems.

Wohlstadter et al. relates to materials and methods, which are provided for producing patterned multi-array, multi-specific surfaces which are electronically excited for use in electrochemiluminescence based tests.

Pfost relates to a multiple fluid sample processor and system for high throughput chemical synthesis and biological assays and/or processing. As shown in Pfost, the processor is a three-layered structure comprised of a top plate or layer 12, a middle plate or layer 14, as well as one or more bottom layers or well plates 16. Col. 5, lines 56-60. The "lower well plate 16 has a plurality of wells 30 which are used to hold the reagents, solid supports, particles, and/or other materials in order for them to react to create products. Each of the reaction wells 30 has one or more entrance channels 32 and one or more exhausted or drain channels 34. The well members 30 can be formed with standard techniques in a single piece of material, or can be formed in the intersection of two, three, or more thin plates which are bonded or fused together." Col. 6, lines 13-21.

Applicants respectfully submit that the applied combination of references does not support a *prima facie* case of obviousness according to these legal standards. Although Pfost suggests a fluid cell or well having an inlet and outlet, or at least one channel having a through hole, there is no reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed, since Sofield does not does not show that one of ordinary skill in the art would have had

some apparent reason to modify the apparatus of Sofield to provide a fluid cell having an inlet and outlet, or channel and through hole, which is compatible with an optical beam source configured to simultaneously direct an optical beam onto each of the microsensors in the array of microsensors, and an optical detector array configured to simultaneously detect the position of each of the microsensors. Accordingly, Claims 64 and 92 should be allowable. Claims 65-74, 77-80, 82-87, and 89, and 93-102, 105-107, and 109 are dependent from Claims 64 and 92, respectively, and should be allowable for the reasons set forth above.

Claims 75 and 103 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Sofield et al., in view of Ellerbock et al., and Wohlstadter et al., and Pfost, as applied to claim 64 above, and further in view of Quate et al. (U.S. Patent No. 6,203,983).

Claims 75 and 103 are dependent from Claims 64 and 92, respectively, and for the reasons set forth above, should be allowable.

Claims 76, 81, 104, and 108 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Sofield et al., in view of Ellerbock et al., and Wohlstadter et al., as applied to claim 64 above, and further in view of Lee et al. (U.S. Patent No. 5,807,758).

Claims 76 and 81, and 104 and 108 are dependent from Claims 64 and 92, respectively, and for the reasons set forth above, should be allowable.

**Conclusion:**

For the reasons presented above, all claims are believed to be in condition for allowance. A Notice of Allowance is therefore respectfully requested.

Should the Examiner feel that a telephone conference would advance prosecution of the present application, he is invited to call the undersigned attorney at the number listed below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY LLP

Date: December 2, 2008 By: /Kirk M. Nuzum/
Kirk M. Nuzum
Registration No. 38983

P.O. Box 1404
Alexandria, VA 22313-1404
619 239 8700

Certificate of Transmission

I hereby certify that this correspondence is being transmitted to the United States Patent & Trademark Office on December 2, 2008 via EFS-Web.

By: /Kim A. Cabello/
Kim A. Cabello